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cranium, and is thus proportionally heavier in woman than in man, and, if allowance be made for the greater development of adipose tissue in the former, the advantage of woman in brain-weight would be still more marked. Although, on the whole, there is a parallelism between the weight of the cranium and its capacity, this relation is not absolute, and a comparison between a series of masculine and one of feminine skulls proves that the latter have greater capacity in proportion to the weight than the former. The results of an extensive series of measurements prove that the cranial capacity is greater in proportion to the weight of the skull in Parisians, Europeans generally, and Hindoos, than in negroes or other inferior races, and that in a new-born infant both cranial capacity and weight of brain, as compared with weight of skull, are three times that of the adult.

The weight of the mandible, compared with that of the skull, is greater in man than in woman, so that in this character civilized man occupies a position between civilized woman and the inferior races, but if the weight of the mandible in woman be compared with that of the femur, it is greater in woman.

The impression conveyed by a careful reading of the memoir is that the connection between brain development and intelligence is so complicated by the relations between the brain and the motor, nutritive, and, it may be added, reproductive functions, and also by those between it and the size and age of the individual, that it is impossible, with our present knowledge, to judge with any certainty of the intelligence of an individual by the weight of the brain, the capacity of the cranium or any relation of these to the entire skeleton or portions of it. Yet some of the relations established seem to point the road to further knowledge of this most abstruse of subjects.

IN MEMORIAM.—The third part of volume III, proceedings of the Davenport Academy, is devoted to the life and labors of the late J. Duncan Putnam. The engraving in front is as near perfection as a portrait can come, and will recall that pale, earnest, honest face that so many loved to look upon. The volume throughout is worthy of the subject, and of the generous spirits who assembled to pay their sincere tributes to modest worth. The closing portion of the pamphlet is devoted to a monograph of the Solpugidæ, to which Mr. Putnam had devoted much time. It is his work as patron, editor, and enthusiastic friend of the Davenport Academy, which will give him an enduring place in the hearts of anthropologists.

MICROSCOPY.[1]

FRENZEL'S METHOD OF FIXING SECTIONS ON THE SLIDE.[2]—In the October number (1882) of the NATURALIST, I have given the excellent method discovered by Dr. Giesbrecht of fixing sections by means of shellac, and also Dr. Gaule's method of using alcohol (50-60 per cent) for the same purpose. In the employment of either of these methods, the object must be stained *in toto.* Dr. Frenzel now offers a method which allows one to color the sections after they have been fixed on the slide. Instead of shellac a solution of gutta-percha in chloroform and benzine is used. The solution must be filtered until it is clear and almost colorless, and must not be made so thin that it will flow quickly on the slide. The fluid is put on with a brush and allowed to dry before the sections are placed. If the object is imbedded in paraffine or a paraffine mixture (*e. g.*, four parts paraffine and one part vaseline), the sections are smoothed out by the aid of a brush wet in alcohol, and then exposed to a temperature of 35° to 50° C. for five to ten minutes, in order that the gutta percha may become sticky; they are then left for five to ten minutes in the air, and finally placed in a vessel containing absolute alcohol heated to 40-50° C., in order to remove the paraffine. Five to fifteen minutes are required to dissolve the paraffine, and a considerable quantity of alcohol must be used, as it is a poor solvent of paraffine. After the alcohol becomes saturated, it may be filtered cold and used again. After the paraffine has been completely removed, the sections are transferred to 70 per cent alcohol, then to lower grades and finally to water. The sections are then ready for staining. After staining and washing they are soaked in absosolute alcohol, and thus prepared for mounting in clove oil and balsam.

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[1] Edited by Dr. C. O. WHITMAN, Newton Highlands, Mass.

[2] Zoologischer Anzeiger, No. 130, p. 51, 1883.

If the object is imbedded in celloidin, as is now frequently done, the sections may be smoothed out with benzine or chloroform, which softens the gutta-percha and thus fixes them in position. After the sections have dried on, they may be stained, washed and transferred to absolute alcohol as before. The application of clove oil before the balsam dissolves the celloidin.

THE HERTWIGS' MACERATING FLUID.[1]—For the isolation of tissues in the Cœlenterates, Oscar and Richard Hertwig recommend the following mixture:

Acetic acid	1	part.
Osmic acid	$\frac{1}{5}$	"
Sea water	1000	"

By means of this fluid not only the nerve cells, muscle cells, etc., can be isolated so that the exact form of the individual cells may be easily recognized, but also the tissues in the form of thin lamellæ may be separated and studied as a whole. Pieces of tissue or whole animals are left in the mixture five to ten minutes, and then washed for several hours in one-fifth per cent acetic acid. The macerated parts can be further prepared and afterwards colored on the slide; or they can be colored at once before preparation with needles. In the first case picrocarmine is used, in the second, Beale's carmine, because it does not harden the tissues, but assists rather the process of maceration. Pieces of tissue may be preserved a long time in glycerine diluted with an equal volume of water, provided a few drops of carbolic acid have been added to secure against mold and Bacteria.

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[1] Jenaische Zeitschrift, XIII, p. 462, 1879.

To obtain preparations of single-cell elements of Actiniæ, the macerated portion must be carefully divided up into smaller parts by needles, and one or more of these parts placed under the cover-glass. Light blows on the cover-glass with a needle will cause the cells to separate. Care should be taken to support one side of the cover by a hair, which is removed quite gradually, after the object has been reduced to very small cell masses. Sliding of the cover may be avoided by placing wax feet under its corners.

Dr. Mark has employed this method and obtained excellent results with it. As he remarks, the great merit of this fluid is, that it separates the cell elements and hardens them at the same time. The *dissociative* and the *preservative* agent are combined in such proportions that the action of the former is confined within desired limits by that of the latter.

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SCIENTIFIC NEWS.

—Dr. Loring, commissioner of agriculture, has forwarded to the secretary of the treasury the following statement submitted to him by Professor Riley, the entomologist of the department, who says: In reply to the letter of the assistant secretary of the treasury, with inclosures from the New York custom house respecting an invoice of vine cuttings from Madeira, suspected of Phylloxera disease, I would state: The samples submitted, upon examination, furnish no sign whatever of Phylloxera, and it is extremely doubtful whether any trace of Phylloxera could be discovered upon any of the cuttings now held in New York—first, because Phylloxera is not known to be destructive in Madeira, and second, because it could only be found in the winter egg, which even in countries where Phylloxera abound, is extremely rare. Hence the chances of the introduction of the pest upon these cuttings are so very remote as not to be worth considering; but even if the cuttings came from a country badly infested with Phylloxera the danger of the introduction of the pest upon them would be very slight, the reason for which conclusion Professor Riley has already discussed in the AMERICAN NATURALIST for March, 1881. Even were it possible to introduce the insect, no harm could result so long as the cuttings were sent to any part of the United States east of the Rocky mountains, since the Phylloxera is indigenous here. On the same supposition that the cuttings are badly infested, prudence would dictate that they should not be sent to the Pacific States, or those portions of it